

## **REMARKS/ARGUMENT**

### **A. Status of the Claims**

Claims 1-68 were pending in the case. Claims 1-27 and 58 have been canceled as drawn to non-elected inventions. The Examiner issued a restriction requirement for the election of one of the following inventions:

- I. Claims 1-27 and 58, drawn to a method for removing nitrogen interference.
- II. Claims 28-57 and 59-68, drawn to an apparatus for measuring the concentration of a substance.

Applicant, on November 10, 2003, previously elected Group II, claims 28-57 and 59-68. Applicant affirms the previous election herein. Therefore, Applicant has canceled claims 1-27 and 58 as drawn to non-elected inventions. Applicant reserves the right to pursue the subject matter of these claims in this or a related application.

Claims 28, 42, 43, 45, 48, 55-57, 59 and 65-68 have been amended. These amended claims do not add new matter to the application and their entry is therefore respectfully requested. Support for amended claims 28, 42, 43, 45, 48, 55-57, 59, 61-64 and 65-68 is found throughout the specification.

Claims 28-57 and 59-68 stand rejected. Claims 28-57, 59-64 and 66-68 stand rejected under 35 U.S.C. §112, ¶1. Claims 67-68 stand rejected under 35 U.S.C. §112, ¶1. Claims 28-57, 59-64 and 66-68 stand rejected under 35 U.S.C. §112, ¶2. Claims 28-37 and 40-57 stand rejected as obvious over Dugan and Chand. Claims 38-39 and 59-64 stand rejected as being obvious over Dugan in view of Chand, as applied to claims 28-37 and 40-57, and further in view of Liu. And claim 65 stands rejected as being obvious in light of Dugan in view of Liu and Rogers.

## **B. Rejections Based on 35 U.S.C. §112 ¶1 Are Overcome**

### **1. Claims 28-57, 59-64 and 66-68 Have Been Amended to Overcome the §112 ¶1 Rejection**

Claims 28-57, 59-64 and 66-68 were rejected because they “do[] not reasonably provide enablement for detecting the substance as it was originally present in the sample.” These claims have been amended to clarify that the substance being detected is the oxidized substance and therefore, claims 28-57, 59-64 and 66-68 comply with §112 ¶1. Applicant respectfully requests reconsideration and withdrawal of these rejections.

Applicant has amended independent claims 28, 59, 65, 66, 67 and 68, not to narrow the scope of the claims, but rather to simply clarify what Applicant intended and believed was the original scope of the claims.

### **2. Claims 67-68 Have Been Amended to Overcome the §112 ¶1 Rejection**

Claims 67-68 were rejected because “[t]o perform the step of selectively converting NO<sub>2</sub> in the sample to NO, nitrogen compounds should be present in the sample in the first place.” Claims 67 and 68 have been amended to clarify that the substance being detected is the oxidized substance and therefore, claims 67-68 comply with §112 ¶1. Applicant respectfully requests reconsideration and withdrawal of these rejections. Applicant has amended independent claims 67 and 68, not to narrow the scope of the claims, but rather to simply clarify what Applicant intended and believed was the original scope of the claims.

## **C. The Rejections of Claims 28-57, 59-64 and 66-68 Based upon 35 U.S.C. §112 ¶2 Are Overcome**

Claims 28-57, 59-64 and 66-68 were rejected because “the substance” detected in the last step “is not clear.” These claims have been amended to clarify that the substance being detected is the oxidized substance and therefore, claims 28-57, 59-64 and 66-68 comply with §112 ¶2. Applicant respectfully requests reconsideration and withdrawal of these rejections.

In addition, Applicant has amended claim 48 to depend from claim 28 as opposed to claim 29 as originally filed. Claim 48 was originally intended to depend from claim 28, as claim 48 is directed toward an optional feature. Support for this amendment can be found at ¶17 of the specification. Applicant believes that claim 48 as intended, and now amended, overcomes the Examiner's rejection based upon §112 ¶2.

Applicant has amended independent claims 28, 48, 59, 65, 66, 67 and 68, not to narrow the scope of the claims, but rather to simply clarify what Applicant intended and believed was the original scope of the claims.

#### **D. Rejections Based on 35 U.S.C. §103(a) Are Overcome**

##### **1. Claims 28-37 and 40-57 Are Not Obvious and Are Patentable Over Dugan and In View of Chand**

Claims 28-37 and 40-57 are not obvious and are patentable over Dugan and in view of Chand because the art cited within the Office Action does not provide a suggestion or motivation to make the claimed combination and therefore, the invention claimed by Applicant is not obvious in light of the cited references. To establish a *prima facie* case of obviousness, "there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of skill in the art, to modify the reference or combine reference teachings." MPEP § 706.02(j). If cited references can be properly combined, *O'Farrell* provides a three prong test for determining whether the combined references establish a *prima facie* case of obviousness. *O'Farrell* held that for a combination of references to render a claimed invention obvious the references must provide to one of skill in the art:

- (1) a detailed enabling methodology for practicing the claimed invention;
- (2) a suggestion for modifying the prior art to practice the claimed invention;  
and
- (3) evidence suggesting that the invention would be successful.

*In re O'Farrell*, 853 F.2d 894, 7 U.S.P.Q.2d 1673 (Fed. Cir. 1988). There is no teaching or suggestion in the cited references, either alone or in combination, of the subject matter of the present disclosure.

While, as the Office Action notes, Dugan “indicates, ‘other methods of separation and detection ... may be employed,” Dugan does not suggest the combination of a thermal oxidizer with electrochemical methods of detection. In fact, the only detector disclosed by Dugan, is a thermal conductivity detector. *See* Dugan, col. 3, ln. 18-22. Dugan teaches using Cu to reduce the NO<sub>x</sub> to N<sub>2</sub> and therefore teaches away from a combination employing an electrochemical cell as the detector because electrochemical cells are not sensitive to N<sub>2</sub>.

In sharp contrast, Chand discloses a transducer for measuring the concentration of sulfur dioxide using a sensing electrode and a counterelectrode. *See e.g.*, Chand, col. 2, ln. 20-62. Chand does not teach, nor does it even suggest, combining a thermal oxidizer with an electrochemical cell as claimed by Applicant’s invention.

Therefore, neither Dugan nor Chand render obvious claims 28-37 and 40-57 of Applicant’s claimed invention. Applicant respectfully requests reconsideration and withdrawal of these rejections.

**2. Claims 38-39 and 59-64 Are Not Obvious and Are Patentable over Dugan in view of Chand and further in view of Liu.**

Claims 38-39 and 59-64 are not obvious and are patentable over Dugan in view of Chand, as applied to claims 28-37 and 40-57, and further in view of Liu. Like Dugan and Chand, Liu does not disclose Applicant’s combination of a thermal oxidizer and an electrochemical cell. And, as explained above in Section III D, there is no suggestion or motivation provided within either Dugan or Chand, nor provided within the Office Action, to combine these cited references. And, Liu disclosing a molybdenum carbide catalyst for converting nitrogen dioxide into nitric

oxide, does not provide this necessary motivation to combine Dugan and Chand. Moreover, nor does there exist any motivation to combine Liu with either of Dugan or Chand. *See In re O'Farrell*, 853 F.2d 894, 7 U.S.P.Q.2d 1673 (Fed. Cir. 1988).

Therefore, Applicant respectfully requests reconsideration and withdrawal of this rejection.

**3. Claim 65 Is Not Obvious and Is Patentable Over Dugan in view of Liu and Rogers.**

Claims 65 is not obvious and is patentable over Dugan in view of Liu and Rogers. The Office Action explained that claim 65 is obvious in light of Dugan in view of Liu and Rogers because “Dugan discloses an apparatus for measuring the concentration of a substance, comprising a thermal oxidizer, a removal device for selectively removing the nitrogen-containing interferant from the sample gas, a conditioner and a detector” and while “Dugan does not disclose molybdenum catalyst for reducing NO<sub>2</sub> to NO. Liu discloses Mo catalyst for reducing NO<sub>2</sub> to NO.” Further, “Dugan in view of Liu do not specifically disclose an on-line analyzer for measuring the amount of a substance in a fluid sample,” but “Rogers discloses a method and apparatus for an on-line organic carbon detection comprising a sample injector with a metering valve to control the rate of a sample flow, a thermal oxidizer comprising a tube furnace 52 and a pyrolysis tube 54, a sample conditioner 68 for controlling the conditions of the resulted gas mixture, a detector 106 connected to and located downstream the sample conditioner and a programmable logic controller for calculating the concentration.”

However, Rogers, in contrast to Dugan, teaches the use of an analyzer in which the oxidized substance (in Roger's case CO<sub>2</sub>) is methanized or reduced, in a methanizer unit, prior to detection. The methane is then passed through a flame ionization detector “which is set to detect the methane concentration.” [Rogers, 8:32-34]. In fact, Rogers teaches away from techniques

measuring oxidized samples and instead asserts the advantages of reducing the oxidized sample, CO<sub>2</sub>, to a methanized product, CH<sub>4</sub>, prior to detection and measurement. And, as explained above, Dugan does not teach or suggest Applicant's combination of a thermal oxidizer and an electrochemical cell.

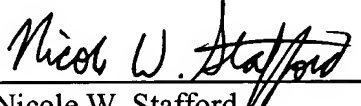
Therefore, nothing in Dugan, Liu, Rogers or in an explanation provided by the Examiner, would suggest a combination of these references. Accordingly, a *prima facie* case for obviousness has not been established. See *In re O'Farrell*, 853 F.2d 894, 7 U.S.P.Q.2d 1673 (Fed. Cir. 1988).

As such, Applicant respectfully requests reconsideration and withdrawal of this rejection.

### SUMMARY

In light of the foregoing remarks and response, it is Applicant's belief that the claims are in condition for allowance. Such favorable action is respectfully requested. If the Examiner has any questions or comments regarding any issue associated with this application, a telephone call to the undersigned representative at 512-542-8409 or Avelyn Broughton at 512-542-8411 is welcome. Please date stamp and return the enclosed postcard evidencing receipt of these materials.

Respectfully submitted,

  
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Nicole W. Stafford  
Attorney for Applicant  
Reg. No. 43,929

Date: February 17, 2004  
VINSON & ELKINS L.L.P.  
2300 First City Tower  
10001 Fannin Street  
Houston, TX 77002-6760  
Phone: (512) 542-8409

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